

WHAT IS CLAIMED IS:

1. An apparatus for separating constituents of a mobile phase, said apparatus comprising:
  - (a) a fluid pathway positioned on said apparatus;
  - (b) a pair of spaced-apart electrodes positioned within said fluid pathway for detecting current flow within a mobile phase when present in said fluid pathway; and
  - (c) a mix ratio determinator coupled to said pair of electrodes for determining the mix ratio of said mobile phase based on said detected current flow.
2. The apparatus of Claim 1, wherein said pair of electrodes is positioned to detect said current flow prior to the separation of said constituents.
3. The apparatus of Claim 1, wherein said pair of electrodes is positioned to detect said current flow subsequent to the separation of said constituents.
4. The apparatus of Claim 1, wherein said pair of electrodes is positioned to detect said current flow prior to the introduction of said constituents to said mobile phase.
5. The apparatus of Claim 1, wherein said pair of electrodes is positioned to detect said current flow subsequent to the introduction of said constituents to said mobile phase.
6. The apparatus of Claim 1, further comprising a mobile phase fluid controller operatively coupled to said mix ratio determinator for adjusting said mix ratio of said mobile phase based on said determined mix ratio.
7. The apparatus of Claim 6, further comprising a first adjustable reservoir for dispensing a first mobile phase fluid to said fluid pathway and a second adjustable reservoir for dispensing a second mobile phase fluid to said fluid pathway.
8. The apparatus of Claim 7, wherein the amount of fluid dispensed from at least one of said adjustable reservoirs is automatically adjusted by said mobile phase fluid controller.

9. The apparatus of Claim 1, further comprising a constituent detector operatively associated with said apparatus.
10. The apparatus of Claim 9, wherein said constituent detector is integral with said apparatus.
11. The apparatus of Claim 1, wherein said apparatus is a liquid or capillary chromatography apparatus.
12. The apparatus of Claim 11, wherein said apparatus is a microfluidic device.
13. A system for separating constituents of a mobile phase, said system comprising:
  - (a) an apparatus comprising:
    - (i) a fluid pathway positioned on said apparatus,
    - (ii) a pair of spaced-apart electrodes positioned within said fluid pathway for detecting current flow within a mobile phase when present in said fluid pathway, and
    - (iii) a mix ratio determinator coupled to said pair of electrodes for determining the mix ratio of said mobile phase based on said detected current flow.
  - (b) at least a first fluid reservoir for introducing a first fluid to said apparatus and a second fluid reservoir for introducing a second fluid to said apparatus.
14. The system of Claim 13, wherein said pair of electrodes is positioned to detect said current flow prior to the separation of said constituents.
15. The system of Claim 13, wherein said pair of electrodes is positioned to detect said current flow subsequent to the separation of said constituents.
16. The system of Claim 13, wherein said apparatus further comprises a mobile phase fluid controller operatively coupled to said mix ratio determinator for adjusting said mix ratio of said mobile phase based on said determined mix ratio.
17. The system of Claim 13, wherein said first and second reservoirs are adjustable.

18. The system of Claim 17, wherein the amount of fluid dispensed from at least one of said adjustable reservoirs is automatically adjusted by said mobile phase fluid controller.
19. The system of Claim 13, further comprising a constituent analyzer integral with said apparatus.
20. The system of Claim 13, wherein said apparatus is a liquid or capillary chromatography apparatus.
21. The system of Claim 13, wherein said apparatus is a microfluidic device.
22. The system of Claim 13, further comprising at least a first fluid and a second fluid.
23. The system according to Claim 13, wherein said first fluid is an aqueous fluid and said second fluid is an organic fluid.
24. A method comprising:
  - (a) contacting a mobile phase with an apparatus for separating constituents of a mobile phase;
  - (b) detecting the current flow of said mobile phase when in contact with said apparatus;
  - (c) determining the mix ratio of said mobile phase based on said detected current flow.
25. The method of Claim 24, wherein said detecting is accomplished by a pair of spaced-apart electrodes positioned on said apparatus.
26. The method of Claim 24, further comprising adjusting the mix ratio of said mobile phase based on said determined mix ratio.
27. The method of Claim 26, wherein said mobile phase comprises constituents and said method further comprises separating said constituents.

28. The method of Claim 27, wherein said constituents are separated prior to said detection step (c).
29. The method of Claim 27, wherein said constituents are separated subsequent to said detection step (c).
30. The method of Claim 24, wherein said apparatus is a microfluidic device.
31. An algorithm for carrying out the method of Claim 24 present on a computer-readable medium.
32. An algorithm for carrying out the method of Claim 26 present on a computer-readable medium.